Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

arm, then shift the center of the protractor (taking care to keep the true edge of the left and middle arms bisecting the points A and B) and draw another line along the true edge of the right arm and the point of intersection of the two lines thus drawn will be a point in the line of sight joining x and y. Now with the $<$ s DyC and Cyx set off on the right and left limbs of the protractor, shift its center till the true edges of the right, middle and left arms traverse D, C and K, dot the center and we have y (one of the places of observation). And again with the $<$ s AxB and Bxy on the left and right limbs, place the true edge of the right hand arm on the line Kmy and shift the center along this line till A and B are traversed by the true edges of left and middle arms then dot the center and you have x (the other place of observation).

The Hydrographer, the Topographer and the Explorer will each find this problem servicable.

ODD NUMBERS AND EVEN NUMBERS.

BY ARTEMAS MARTIN, ERIE, PA.

All numbers are either odd or even. An *even* number is a number that can be divided by 2 without a remainder; an *odd* number is one that is not divisible by 2. 1, 3, 5, 7, are *odd* numbers; 2, 4, 6, 8, are *even* numbers.

All even numbers are comprised in the formula $2n$, and all odd numbers in either of the formulæ $2n + 1$, $2n - 1$.

Proposition I. — The sum of two even numbers is even.

Proof. — Let $2m$ and $2n$ represent any two even numbers; their sum is $2m + 2n = 2(m + n)$, which is even.

Prop. II. — The sum of two odd numbers is even.

Proof. — Let $2m + 1$ and $2n + 1$ be any two odd numbers; their sum is $2m + 1 + 2n + 1 = 2m + 2n + 2 = 2(m + n + 1)$.

Prop. III. — The sum of an odd number and an even number is odd.

Proof. — Let $2m + 1$ be any odd number and $2n$ any even number; then $2m + 1 + 2n = 2(m + n) + 1$, which is odd.

Prop. IV. — The difference of two even numbers is even.

Proof. — $2m - 2n = 2(m - n)$.

Prop. V. — The difference of two odd numbers is even.

Proof. — $2m + 1 - 2n - 1 = 2(m - n)$.

Prop. VI. — The difference of an odd number and an even one is odd.

Proof. — $2m + 1 - 2n = 2(m - n) + 1$.

If the even number is greater than the odd one, we have $2m - 2n - 1 = 2(n - m) - 1$, the second form of an odd number.

Prop. VII. — The sum of any number of *even* numbers is even ·

Proof. — Let $2r_1, 2r_2, 2r_3, \ldots 2r_n$ be any number of even numbers; then $2r_1 + 2r_2 + 2r_3 + \ldots + 2r_n = 2(r_1 + r_2 + r_3 + \ldots. + r_n)$, which is even.

Prop. VIII. — The sum of an *even* number of odd numbers is even.

Proof. — Let $2r_1 + 1, 2r_2 + 1, 2r_3 + 1, \ldots 2r_{2n} + 1$ be any even number of odd numbers; their sum is $2r_1 + 2r_2 + 2r_3 + \ldots + 2r_{2n} + 2n = 2(r_1 + r_2 + r_3 + \ldots + r_{2n} + n)$ an even number.

Prop. IX. — The sum of an *odd* number of odd numbers is odd.

Proof. — $(2r_1 + 1) + (2r_2 + 1) + (2r_3 + 1) + \ldots + (2r_{2n+1} + 1) = 2(r_1 + r_2 + r_3 + \ldots + r_{2n+1}) + 1$, an odd number.

Prop. X. — The product of any number of even numbers is even.

Proof. — $(2r_1)(2r_2)(2r_3) \ldots (2r_n) = 2(2^{n-1}r_1r_2r_3 \ldots r_n)$.

Prop. XI. — The product of an odd number and an even number is even.

Proof. — $2r \times (2n + 1) = 2(2rn + r)$.

Prop. XII. — The product of any number of odd numbers is odd.

Proof. — $(2r_1 + 1)(2r_2 + 1)(2r_3 + I) \ldots. (2r_n + 1) = 2b + 1$, by putting $2b$ for all the terms of the product except 1.

Some years ago the following problem was proposed in a Medical Almanac: "It is required to put 20 horses in a stable containing 5 stalls, and have an odd number of horses in every stall."

Here we have an *even* number of horses and an *odd* number of stalls, and the sum of an *odd* number of odd numbers is required to be *even*, which by *Prop.* IX, is impossible.

Many persons spent hours of patient study in vainly endeavoring to solve this impossible problem.

ON THE SOLUTION OF QUADRATIC EQUATIONS.

BY O. D. OATHOUT, READ, IOWA.

All complete quadratic equations can be made to take the form

$$ax^2 + bx = c, \tag{1}$$

wherein a, b and c are coefficients in the most general sense of the term, and the highest exponent of x is 2. Multiply (1) by $4a$ and add b^2 to each member and we have